

ARRANGEMENT COMPRISING A PANEL PERTAINING TO A FLAT SCREEN

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is the US National Stage of International Application No. PCT/EP2004/005429, filed May 19, 2004 and claims the benefit thereof. The International Application claims the benefits of German application No. 10323221.4, filed May 22, 2003, both applications are incorporated by reference herein in their entirety.

FIELD OF INVENTION

[0002] The invention relates to an arrangement comprising a panel pertaining to a flat screen which can be illuminated from the rear by the light of a back light, with a back light control adjusting the luminance detected by a sensor to a predefinable target value.

SUMMARY OF THE INVENTION

[0003] A back light control is normally provided for a so-called LCD panel (LCD display module) in order to control the luminance of the back light. This backlight control essentially adjusts the luminance of the back light detected by a sensor, the light of which illuminates the panel from the rear, to a constant target value. It is disadvantageous that this type of control only allows the luminance of the back light to be detected and regulated, influences disturbing the luminance of an image that can be reproduced on a panel are not detected and regulated. For instance, it is not possible to detect and correspondingly correct certain influences disturbing the luminance of the image as a result of ageing effects of the LCD fluid of the panel, the diffuser and/or polarization films.

[0004] The object of the present invention is to specify an arrangement of the type mentioned at the start which prevents certain influences from disturbing the luminance of an image that can be reproduced on a panel.

[0005] This object is achieved in that light-permeable parts are arranged between the back light and the sensor, the ageing and/or temperature properties of which essentially correspond to those of the light-permeable parts of the panel.

[0006] The parts arranged between the back light and sensor essentially correspond to the those of the panel with regard to physical structure and with regard to physical behaviour. On the one hand, the backlight illuminates the panel from the rear and on the other hand the parts arranged between the back light and the sensor, with which the sensor quasi detects disturbing ageing effects of these light-permeable parts of the panel with regard to the luminance, with the back light control correcting these disturbing ageing effects.

[0007] In one embodiment of the invention provision is made for light-permeable parts to only comprise diffuser and/or polarization films. These embodiments which can be easily implemented allow influences of temperature-dependent and ageing-dependent parts which disturb the luminance to be detected and corrected.

[0008] To further reduce certain influences from disturbing the luminance of an image that can be reproduced on a panel,

provision is made according to another embodiment of the invention for the light-permeable parts to further comprise panel glass with LCD fluid, with which disturbing influences resulting from ageing and or temperature effects of the glass can be detected and corrected.

[0009] In a preferred embodiment of the invention, all light-permeable parts of a panel are taken into consideration and corresponding parts are arranged between the back light and sensor. This means that a 'small' panel (miniature panel) is arranged between the back light and sensor, with the size of the miniature panel corresponding approximately to the sensor size. No knowledge about the influence of the disturbances and/or knowledge about the properties of the panel is required, the backlight control corrects these disturbances.

[0010] The invention is described below in more detail with reference to an exemplary embodiment with regard to the only figure in the drawing. The figure in the drawing shows an arrangement for controlling the luminance of a panel.

BRIEF DESCRIPTION OF THE DRAWING

[0011] The sole figure shows an exemplary arrangement for controlling the luminance of a panel.

DETAILED DESCRIPTION OF INVENTION

[0012] The number 1 indicates a graphics processor which provides the back light control 2 with a predefinable target value corresponding to a target luminance. A sensor unit 3 detects the luminance of light-permeable parts 4 and similarly transmits one of the actual values corresponding

to this detected luminance to the backlight control 2, with this back light control 2 adjusting the intensity of the light of a back light 5 in accordance with the deviation of the target value from the actual value. The light of the back light 5 illuminates both an LCD panel 6 and also the light-permeable parts 4 from the rear, which are arranged between the sensor unit 3 and the back light 5 and the ageing and/or temperature properties of which essentially correspond to those of the light-permeable parts of the panel. With such an arrangement of the light-permeable parts 4 between the backlight 5 and the sensor unit 3, the sensor unit 3 detects the luminance of the light-permeable parts 4, which essentially correspond to the luminance of the panel 6. Disturbing ageing and/or temperature effects of the light-permeable parts of the panel 6 with regard to the luminance are thus also quasi detected, with the back light control 2 correcting these ageing and/or temperature effects and adjusting the luminance of an image that can be displayed on the panel 6 according to the target value.

[0013] In a simple embodiment, the light-permeable parts 4 comprise diffuser and/or polarization films 4a, which essentially correspond to the diffuser and/or polarization films 6a, 6b of the panel 6, with which temperature-dependent and ageing-dependent influences of these films which disturb the luminance of the panel are detected by the sensor unit 3 and are corrected by the back light control 2.

[0014] To further reduce certain influences from disturbing the luminance of an image that can be reproduced on the panel, the light-permeable parts 4 can further be provided with a glass 4c and LCD fluid 4d corresponding to the panel

glass 6c and/or the LCD fluid 6d, with disturbing influences being able to be detected and corrected by virtue of the ageing effects of the glass and/or the LCD fluid.

[0015] The light-permeable parts 4 preferably correspond to all light-permeable parts of the panel. A miniature panel configured in this manner, the size of which correspond to the size of the sensor, essentially allows disturbances to be corrected by virtue of the ageing and temperature effects of the panel. Knowledge about the influence of the disturbances and/or knowledge about the properties of the panel is not required, the backlight control corrects the disturbances.